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CERTIFICATION REPORT FOR AREA 1, PHASE II

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT FERNALD, OHIO

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U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

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REVISION 0
PCN 1

REVISION SUMMARY

Revision	Date	Description of Revision
Rev. 0	9-28-00	Initial controlled issuance
PCN 1	11-7-00	Correction of inaccurate reference to failed CUs in Paragraph 1 of the Executive Summary, an incorrectly reported analytical result unit on Page 3-3 and information on the failed CUs in Section 5.1.5

EXECUTIVE SUMMARY

PCN 1 This certification report presents the information and data used by the U.S. Department of Energy (DOE) to determine that existing soil concentrations do not exceed the final remediation levels (FRLs) in Area 1, Phase II (A1PII). On the basis of this reported information and supporting project files, DOE has determined that no additional remedial actions are required in this area of the site. Upon approval from the regulatory agencies, DOE intends to proceed with future land use activities.

To date, three A1PII certification reports have been submitted to the regulatory agencies. The first report covered 22 CUs in Sector 1, Sector 2A, and the Conveyance Ditch (DOE 1998a). The second report covered four CUs in Sector 2B (DOE 1999a), and the third report covered 13 CUs in Sector 2 west of the North Access Road (NAR, DOE 2000a). The remaining 52 CUs within A1PII are included in this certification report, along with the certification of the underground utility corridors (five CUs) outside the former Sewage Treatment Plant (STP). Certification sampling was conducted in each CU to verify that the certification criteria were achieved. These criteria stated that: 1) the mean concentrations or activities of the primary area-specific constituents of concern (ASCOCs) within a CU were less than the FRLs at the 95 percent upper confidence level (UCL) (90 percent for secondary ASCOCs); and 2) no certification result exceeded two times the FRL (i.e., the "hot spot" criterion). If either of these criteria was not met, then further investigation and possible excavation would have been required. If both of these criteria were met for a CU, then it could be released for final land use. All 50 CUs except two passed both criteria during the first certification event. Additional stabilization treatment, excavation, and recertification were required within a 0.4-acre area in the Trap Range. Remediation in all CUs is now complete and will be considered certified when the U.S. Environmental Protection Agency (EPA) and the Ohio Environmental Protection Agency (OEPA) agree that the certification criteria have been met for A1PII.

The certification samples were analyzed at laboratories on the Fernald Environmental Management Project (FEMP) Approved Laboratories List per the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ, DOE 1998b). All these samples were analyzed and reported at the required analytical support level (ASL). Analytical data packages included sample results with associated quality assurance/quality control (QA/QC) data and all

applicable raw data. The data were also subjected to the required validation and verification process, which did not identify any significant quality concerns.

DOE has restricted access to certified areas in order to maintain their integrity prior to final land use development. A FEMP procedure (EP-0008) has been developed to implement a process to protect certified areas from becoming recontaminated.

was required. Certification samples were collected in the top 6-inch interval of soil directly beneath the pavement and gravel sub-base.

3.1.2 Utility Trench CUs

As discussed in the A1PII Sector 3 Utility Trenches Certification Sampling PSP (DOE 1999e), sampling occurred during the excavation of trenches and the removal of the utilities. Section 4.0 of the A1PII Supplemental Characterization Package (DOE 1999b) discusses the process for the removal of the utilities and the disposition of the material excavated. Once the pipe and bedding material was removed, the trench was over-excavated at the designated sample locations, and soil was placed adjacent to the trench. The soil material was then scanned using real-time instrumentation, specifically using HPGe detectors.

3.2 CHANGES TO SCOPE OF WORK

3.2.1 CUs East of Former NAR

The scope of work for certification sampling was performed as documented in the CDL and PSP, and there were no major changes during field implementation. Final certification sampling locations and CU boundaries remained as identified, and all analyses were carried out as planned. The primary changes to the planned scope of work resulted from stormwater management and CU sampling results.

PCN 1 Water that had accumulated in these CUs had to be pumped out prior to sampling: A1P2-S3DP-01, A1P2-S3DP-02, A1P2-S3HW-01, A1P2-S1TR-01, A1P2-S1TR-02, A1P2-S1TR-03, A1P2-S1TR-04, and A1P2-S1SB-02. Prior to pumping, several water samples were collected to ensure that the water was pumped to the appropriate locations. Water samples were collected from the following locations: Sludge Drying Bed (A1PI-S3HW-01), Incinerator Area (A1P2-S3DP-01), and Sediment Basin (A1P2-S1SB-02). Water from the Trap Range CUs did not require sampling. The sample results indicated total uranium concentration from the Sludge Drying Beds of 37 ppm, which is above the limit for stormwater discharge for the water. As a result, the water from A1P2-S3DP-01 was pumped via transfer line to the Advanced Wastewater Treatment Facility (AWWT) for treatment, and the water from A1P2-S3DP-02 was pumped to the conveyance channel. Water from A1P2-S3HW-01 drained into A1P2-S3DP-02, and all 16 samples were collected. Once the A1P2-S3DP-02 CU was dry, all 16 samples were collected and the remaining water from A1P2-S3DP-01 was diverted into this area. Once A1P2-S3DP-01 was dry, all 16 samples were collected. Once the CUs were dry, field conditions were evaluated to determine if sediment samples were required. Significant sediment had accumulated

at the following locations and sediment samples were collected: A1P2-S3DP-01-09, -12, -15 and A1P2-S3DP-02-10. The certification sample was collected from the top 6 inches of native, undisturbed soil beneath the sediment. Both sample results were used in the statistical analysis for the CU as presented in Appendix A. The same approach was used for CU A1P2-S1SB-02. The CU was pumped dry and sediment samples were collected at the following locations: A1P2-S3SB-02-01, -04, -10, and -15.

The following additional actions were taken in the following CUs as a result of initial sampling results:

- CU A1P2-S3SA-08 – One of the two additional samples under the CG&E tower was above the FRL for radium-226. As a result, the area was stripped 6 inches, and the stripped soil (A1P2-S3SA-08-CG1-RM) was dispositioned in the OSDF. Two additional samples were taken from the post-excavation area and the results were below FRL for radium-226 (1.56 and 1.08 pCi/g).

- CU A1P2-S2NI-05 – Statistical analysis of the original 12 certification samples showed a failure for thorium-232 for the *a posteriori* sample size. The additional archive samples were collected, analyzed, and included in the statistical analysis.

- CU A1P2-S1TR-01 – Statistical analysis of the original 12 samples showed a failure for arsenic. Analysis of the additional four archive samples showed above-FRL and hot spot conditions in the CU. After evaluating the results from this and adjacent CUs, samples were collected at depths (0 to 6 inches, 6 to 12 inches, 12 to 18 inches) at the location with the highest result (A1P2-S1TR-01-09). Lead stabilization of a 15-foot by 30-foot by 3-inch deep area followed by a 6-inch excavation within a portion of the CU was completed to remediate the CU failure.

- CU A1P2-S1TR-03 – Statistical analysis of the 12 samples showed a failure for the arsenic ASCOC. A 6-inch excavation within a portion of the CU was completed to remediate the CU failure.

- CU A1P2-S1TR-12 - This CU was added to certify the footprint of the 0.4-acre, 6-inch excavation designed to address the certification failure for CU A1P2-S1TR-01 and -03.

- CU A1P2-S1TR-13 - This CU was added to certify the footprint of the 0.4-acre, 18-inch excavation designed to address the certification failure for CU A1P2-S1TR-12.

The only other activities that were outside the planned scope of work were the discovery of some contaminated debris in STP, and the removal of the CG&E tower legs adjacent to the NAR in CU A1P2-S3NI-02.

5.0 CERTIFICATION EVALUATION AND CONCLUSIONS

Certification success or failure was based on a review of certification sample data from each CU against criteria discussed in Section 2.0. All CUs were evaluated against these criteria and the final certification statistics are presented in Appendix A.

5.1 CERTIFICATION RESULTS AND EVALUATION

5.1.1 Certification Results for A1PII Sector 1, Sector 2A, and Conveyance Ditch

All 22 CUs for A1PII Sector 1, 2A and the Conveyance Ditch passed the certification criteria. The determination of successful certification or certification failure was based on a review of certification sample data from each CU against criteria discussed in Section 2.0. All CUs in A1PII passed final certification relative to the average concentration of COCs and the "hot spot" determination. All CUs passed on the first round of certification, and no additional corrective actions were necessary. Final certification data are presented in Appendix A.

5.1.2 Certification Design for A1PII Sector 2B

All four CUs for A1PII-2SB passed the certification criteria. Certification success or failure was based on a review of certification sample data from each CU against criteria discussed in Section 2.2.5. All CUs passed final certification relative to the average COC concentration and the two times FRL "hot spot" criterion. All CUs passed on the first round of certification, and no additional corrective actions were necessary. Final certification data are presented in Appendix A. A review of the certification results reveals that no sample result exceeded the FRL.

5.1.3 Certification Design for A1PII Sector 3 Utility Trenches

All five CUs for A1PII-S3UT passed the certification criteria. Certification success or failure was based on a review of certification sample data from each CU against criteria discussed in Section 2.2.5. All CUs passed final certification relative to the average COC concentration and the two times FRL "hot spot" criterion. All CUs passed on the first round of certification, and no additional corrective actions were necessary. Final certification data are presented in Appendix A. A review of the certification results reveals that no sample result exceeded the FRL.

5.1.4 Certification Design for A1PII Sector 2 CUs West of Former NAR

All 13 CUs passed the certification criteria. Certification success or failure was based on a review of certification sample data from each CU against criteria discussed in Section 2.2.5. All CUs passed final certification relative to the average COC concentration and the two times FRL "hot spot" criterion. All CUs passed on the first round of certification except CU A1PII-S2SB-01. This CU passed the average UCL and "hot spot" criteria, but failed the *a posteriori* sample size calculation for arsenic. The additional four archive samples were collected and submitted for analysis. With the additional four samples, the CU passed all certification criteria, and no additional corrective actions were required. Final certification data are presented in Appendix A.

5.1.5 Certification Design for A1PII Characterize for Reuse Areas, Trap Range, Sector 2 CUs East of Former NAR, and Sector 3

All of the initial CUs passed the certification criteria except CUs A1P2-S1TR-01 and A1P2-1TR-03. For CU A1P2-S1TR-01, statistical analyses of the original 12 samples a failure for arsenic. In addition, sample location -09 also failed the 2xFRL rule for lead. For CU A1P2-S1TR-03, the CU failed the UCL and the *a posteriori* test for arsenic.

PCN 1 As presented earlier, a contiguous 0.4-acre remediation area (Figure 5-1) was designed to encompass sample location -09 and the other above-FRL sample locations for arsenic and lead within these two CUs. In order to delineate the vertical extent of contamination, samples were taken at depth (6 to 12 inches and 12 to 18 inches) at location 9. Results of the at-depth sampling indicated that contamination was expected to be limited to the top 6 inches. Statistical analysis of A1P2-S1TR-01 using the 6 to 12-inch interval for location 9 passes certification confirming the excavation approach. Both the statistical analysis with the 0 to 6-inch and the 6 to 12-inch intervals at location 9 are presented in Appendix A. For CU A1P2-S1TR-03, the CU passes the statistical analysis when the samples (A1P2-S1TR-06, 08, and 09) within the 0.4-acre excavation are excluded. The statistical analyses, both with and without the samples in the 0.4-acre excavation area, are presented in Appendix A.

After the stabilization and 6-inch excavation in the 0.4-acre area, the CU for this footprint was sampled and analyzed (A1P2-S1TR-12). The results for the footprint passed certification for lead but failed for arsenic. At-depth sampling to determine vertical extent of the arsenic contamination was performed. Results indicated that below-FRL arsenic values could be reached within the top 18 inches. Thus, an additional 18-inches was excavated within the 0.4-acre area and the area re-sampled for certification

(A1P2-S1TR-13). Results from this recertification attempt were successful as the 0.4-acre CU passed certification for arsenic.

All the other CUs passed final certification on the first round except for CUs A1P2-S2NI-05. For CU A1P2-S2NI-05, statistical analyses of the original 12 certification samples shows a failure for thorium-232 for the *a posteriori* sample size. The additional archive samples were collected, analyzed, and included in the statistical analyses. The CU subsequently passed. All areas in CU A1P2-S3SA-08 were stripped 6 inches during remediation activities except the area under the CG&E tower. The radium-226 result for one of the two additional samples collected under the CG&E tower was above-FRL and this area was subsequently stripped 6 inches. The results for certification samples collected in this CU show that 6-inch stripping was adequate for removal of above-FRL surface contamination. Therefore, the conditions for certification have been met for this CU.

5.2 SLUDGE DRYING BED HAZARDOUS WASTE MANAGEMENT UNIT CLOSURE

CU A1P2-S3HW-01, which represents the HWMU for the Sludge Drying Beds, has successfully passed the certification criteria as stated in Section 2.2.5. This HWMU is now considered closed under the integrated Resource Conservation and Recovery Act (RCRA)/CERCLA Director's Findings and Observations process. The DOE will remove posted signs/barriers, stop inspections, and remove this unit from the Part A permit application.

5.3 CERTIFICATION CONCLUSIONS AND FUTURE LAND USE

All of the A1PII area has passed certification statistical analyses relative to the determination of average residual soil concentrations within applicable confidence bounds of all the ASCOCs, and relative to the two times FRL "hot spot" criterion except those noted in Section 5.1.5. Based on these results, DOE has determined that the remedial objectives in the OU5 ROD have been achieved in A1PII, and no further remedial actions are required. A1PII will be released for final land use upon approval of the regulatory agencies. Note that DOE is planning the following activities in A1PII:

- The A1PII Sedimentation Basin located in Sector 1 will be extended south to accommodate additional drainage from the OSDF area
- DOE is planning not to extended the NAR through STP excavation area
- A portion of the former Trap Range area will be used to stockpile construction material. The planned area is north of the current CU failure.